



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/568,997

02/16/2006

Kazuhiko Honda

52433/837

1770

26646 7590 09/14/2011

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1734

MAIL DATE

DELIVERY MODE

09/14/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,997	Applicant(s) HONDA ET AL.	
	Examiner WEIPING ZHU	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-3 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-3 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/19/2011</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Status of Claims

1. Claims 1-3 are currently under examination, wherein claim 1 has been amended in applicant's amendment filed on July 19, 2011.

Status of Previous Rejections

2. The previous rejections of claims 1-3 under 35 U.S.C. 103(a) as stated in the Office action dated April 27, 2011 are maintained as follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (2001-279412 A) in view of Nitto et al. (US 4,437,905).

With respect to claim 1, JP ('412 A) discloses a process for producing a high strength galvanized steel sheet comprising hot-dip galvanizing a high strength steel sheet having by weight 0.4-2.0% of Si (abstract and claim 1) in a reducing zone of a furnace under an atmosphere containing by weight 1-70% of hydrogen and the balance comprising N₂ and H₂O; controlling in the atmosphere the log (PH₂O/PH₂) of the water partial pressure and hydrogen partial pressure to log (PH₂O/PH₂) ≤ -0.8 (paragraphs [0022]-[0023], machine translation); annealing the steel sheet; cooling the steel sheet by a plating bath; and heating for alloying the steel sheet at 460-550°C (paragraphs [0029]-

Art Unit: 1734

[0032], machine translation). The $\log (PH_2O/PH_2)$ disclosed by JP ('412 A) overlaps the claimed range of $(PH_2O/PH_2) \leq -0.5$. A prima facie case of obviousness exists. See MPEP 2144.05 I. JP ('412 A) further discloses the process is carried out in a continuous system hot-dipping line comprising an oxidizing zone, a reducing zone and a plating zone (paragraphs [0021]-[0027]). The reducing and plating zones of the continuous system hot-dipping line as disclosed by JP ('412 A) obviously read on the claimed apparatus limitation of an all radiant tube type annealing furnace without an oxidizing zone wherein the annealing and plating are carried out. JP ('412 A) does not specify the atmosphere introduced into the reducing zone comprises CO_2 , O_2 and CO as claimed. Nitto et al. ('905) discloses the presences of CO_2 (2.3% by volume), O_2 , CO in a continuous annealing atmosphere introduced into a reducing zone in a continuous annealing furnace (col. 7, line 1 to col. 8, line 40). It would have been obvious to one of ordinary skill in the art that these gases would be present in the atmosphere introduced into the reducing zone of JP ('412 A), because the processes of annealing of JP ('412 A) and Nitto et al. ('905) are similar and are carried out in similar apparatus. The content of CO_2 (2.3% by volume) disclosed by Nitto et al. ('905) appears to be within the claimed CO_2 content range of 1-100 wt%. JP ('412 A) does not disclose controlling $\log (PCO_2/PH_2)$ and $\log (P_T/PH_2)$ as claimed. However, it has been held that discovering an optimum value of a result-effective variable involves only routine skill in the art; see *In re Boesch*, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the partial pressures of H_2 , H_2O , CO_2 and CO are result effective variables, because they would directly affect the intensities of the oxidation and reduction of the steel sheet as

Art Unit: 1734

disclosed by Nitto et al. ('905) (col. 7, line 1 to col. 8, line 6). The claimed total pressure would be a result-effective variable too because it is the sum of the partial pressures of H_2O and CO_2 . It would have been obvious to one skilled in the art to have optimized the $\log(P_{CO_2}/P_{H_2})$ and $\log(P_T/P_{H_2})$ in the reducing zone of JP ('412 A) in order to achieve desired intensities of the oxidation and reduction of the steel sheet as disclosed by Nitto et al. ('905) (col. 8, lines 3-6). JP ('412 A) does not specify the annealing temperature as claimed. Nitto et al. ('905) discloses an annealing temperature of from $700^\circ C$ to the Ac_3 point (abstract), which overlaps the claimed temperature range.

With respect to claims 2 and 3, JP ('412 A) discloses that the plating bath contains 0.05-0.25 Al (paragraph [0024], machine translation), which overlaps the Al content in the plating bath as claimed in claims 2 and 3. The alloying temperature of JP ('412 A) would obviously satisfy the claimed formula because both the alloying temperature and the Al content as disclosed by JP ('412 A) overlap the claimed alloying temperature and the Al content respectively.

Response to Arguments

4. The applicant's arguments filed on July 19, 2011 have been fully considered but they are not persuasive.

First, the applicant argues that both JP ('412 A) and Nitto et al. ('905) teach a conventional production process including a step of oxidizing in an oxidizing zone and a step of reducing in a reducing zone having an atmosphere of N_2 and H_2 , while the process of the instant invention involves using an all radiant tube furnace without an oxidizing zone to continuously hot-dip galvanize the high strength steel sheet without

Art Unit: 1734

passing it through an oxidizing zone.. In response, the examiner notes that JP ('412 A) discloses that the oxidizing zone is in a pretreatment furnace separated from the reducing and plating zones of the continuous system hot-dipping line (paragraph [0029]). Therefore, JP ('412 A) does disclose an annealing furnace having only reducing and plating zones without an oxidizing zone which would obviously meet the claimed apparatus limitation of an all radiant tube type annealing furnace without an oxidizing zone wherein the annealing and plating are carried out. Furthermore, it is noted that the instant claim 1 does not exclude an oxidizing step before an annealing step in a reducing zone in the all radiant tube furnace without an oxidizing zone. Actually, as indicated in the instant specification (lines 24-31, page 7), an oxide film is produced at the surface of the steel sheet before the annealing and is ensured to be sufficiently reduced in the reducing zone of the all radiant tube furnace without an oxidizing zone. The process of JP ('412 A) in view of Nitto et al. ('905) satisfying all the claimed limitations as discussed above renders the claimed process obvious to one of ordinary skill in the art.

Second, the applicant argues that the reason for JP ('412 A) to keep $\log (PH_2O/PH_2) \leq -0.8$ is that the oxide film of the iron generated cannot be sufficiently reduced if -0.8 is exceeded while the instant invention expands the range of $\log (PH_2O/PH_2)$ to ≤ -0.5 by adding CO_2 and CO to prevent the formation of iron oxide. In response, the examiner notes that the range of $\log (PH_2O/PH_2)$ disclosed by JP ('412 A) overlaps the claimed range and CO_2 and CO are also included in the atmosphere of JP ('412 A) in view of Nitto et al. ('905) as discussed above. The motivations to limit the

Art Unit: 1734

range of log (PH₂O/PH₂) and to add CO₂ and CO of JP ('412 A) in view of Nitto et al. ('905) do not have to be the same as those of the instant invention. See MPEP 2144 [R-5].

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emily Le can be reached on 571-272-0903. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1734

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Weiping Zhu/
Examiner, Art Unit 1734

/Emily M Le/
Supervisory Patent Examiner, Art Unit 1734
9/7/2011